Unit 13 Day 6 REVIEW

p264: 97-112
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$f(x)=3x^2-4 \quad g(x)=x^2-3x-4$

97 $(f+g)(x)=3x^2-4+x^2-3x-4$

$=\underline{4x^2-3x-8}$

98 $(fg)(x)=(3x^2-4)(x^2-3x-4)$

$=3x^4-9x^3-12x^2$

$\quad -4x^2+12x+16$

$\underline{3x^4-9x^3-16x^2+12x+16}$

99 $(f-g)(4)=44-0=\underline{44}$

$f(4)=3(4)^2-4=3(16)-4=44$ use #98

$g(4)=(4)^2-12-4=0$ or use #98

100 $(f+g)(-4)$ use #97

$(f+g)(-4)=4(-4)^2-3(-4)-8$

$=64+12-8$

$=\underline{68}$

101 $(f+g)(2k)$ use #97

$(f+g)(x)=4x^2-3x-8$

$=4(2k)^2-3(2k)-8$

$=\underline{16k^2-6k-8}$

102 $\left(\frac{f}{g}\right)(3)=\frac{3(3)^2-4}{(3)^2-3(3)-4}$

$=\frac{27-4}{9-9-4}$

$=\boxed{-\frac{23}{4}}$

103 $\left(\frac{f}{g}\right)(-1)=\frac{3(-1)^2-4}{(-1)^2-3(-1)-4}$

$=\frac{3-4}{1+3-4}=\frac{-1}{0}$ $\oslash$

104 look at #98 $D:(-\infty,\infty)$

OR $f(x)$ $D:(-\infty,\infty)$, $g(x)$ $D:(-\infty,\infty)$ $\therefore fg$ $D:(-\infty,\infty)$

105 $\frac{f}{g}=\frac{3x^2-4}{x^2-3x-4}$

$x^2-3x-4\neq 0$

$(x-4)(x+1)=0$

$x\neq 4 \quad x\neq -1$

$\frac{f}{g}$ $D:(-\infty,-1)\cup(-1,4)\cup(4,\infty)$

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p416:

① B. Because it is one-to-one

② $f(x)=x^3-3$

$x=y^3-3$

$x+3=y^3$

$\sqrt[3]{x+3}=y$

$f^{-1}(x)=\sqrt[3]{x+3}$

③ $f(x)=\sqrt{25-x^2}$

$x=\sqrt{25-y^2}$

$x^2=25-y^2$

$x^2-25=-y^2$

$-x^2+25=y^2$

$y=\pm\sqrt{-x^2+25}$ Not one-to-one

④ $f^{-1}(50{,}000)$ is the # of years (since 1998) it would take the investment to grow to $50,000

⑤ yes, they are reflections of on another across the $y=x$ line.